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Final Report
Summer Intern Program
June/July '93
January 14, 1994

Dr. Appelbe ((404)894-6187; bill@cc.gatech.edu)
College of Computing
Georgia Institute of Technology
Atlanta, GA 30332-0280

Summary

This report summarizes the summer internship program conducted this summer, supported by an ONR grant (N00014-92-J-1828, Georgia Tech budget C-36-542). The report describes the work undertaken by the students, results of the program, and future plans. Overall, the internship program was a complete success. Every one of the seven students in the program completed a significant research project under supervision of a faculty member and rated their experience highly. Two of the students have continued to work on research projects within the College during the Fall quarter, and one of them is entering the MS program this Winter.

We are integrating our program with a similar summer internship program in the School of Electrical and Computer Engineering, that has been run for the past 3 years with NSF support. By integration, I mean that we are jointly recruiting nationally for summer interns, and routing students based upon their background and interests.

Thus, we plan to run a similar program again next summer, with as many as a dozen students and some national as well as local recruitment, and closer cooperation with Electrical and Computer Engineering. National recruitment will give us a larger and stronger pool of applicants (though we still intend to concentrate locally). Cooperation with Electrical and Computer Engineering will give the students a stronger sense of community and a broader experience.

We propose to use the excess funds as seed money for this program.

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1 Program Organization

The original goal of the summer internship program was:

" The goal of the internship program is to give minority undergraduate students an introduction to what graduate study in Computer Science is like, to encourage them to consider graduate education. A further goal is to build stronger relationships with local four year HBCUs (Historically Black Colleges and Universities)."

To accomplish this we organized an eight week program, consisting of:

- A research project.
- A series of seminars by different faculty on their research areas, partly modeled on our course "Introduction to Graduate Studies in Computer Science" that all incoming graduate students are required to take.
- Short courses, run in conjunction with the College of Computing Continuing Education staff, on topics such as UNIX and C.

We recruited students through the active cooperation of faculty at local HBCUs (including Spellman College, Clark-Atlanta University, and Morris Brown College). The active participation, suggestions, and guidance of these faculty was a key in planning the program, advertising, recruiting, and evaluating applications from students.

The first week that students were in the program was used for orientation: familiarizing them with the college and campus, showing them how to use UNIX tools such as mail, and, most importantly, matching each of them with a research project and advisor.

The research projects were the major component of the program; they are discussed below. The seminars were quite successful, as they exposed students to a broad range of research interests and challenges and were relatively easy to organize. We conducted the short courses by allowing students to enroll on a no-fee basis in continuing education courses that were appropriate for them, given their preparation and needs. Most students enrolled in a couple of two or three day courses.

Another important aspect of the program was continuous mentoring. For the first two weeks, all students met on a daily basis to discuss any problems they were having, and so forth. Later we met two or three times a week to

review progress, and students were asked to produce progress reports and present their research. Students met regularly with their project advisors and other graduate students.

2 Research projects

We solicited research projects from all the faculty. The guidelines for such projects were:

- Have a research component (not just “programming”, for example).
- Doable by an undergraduate without specialized skills that would require a graduate course to master
- Able to reach closure in about 8 weeks of full-time work

We had about 8 projects that met our guidelines. Students listened to presentations of all the projects, then discussed the details of projects they were interested in in more detail individually with the faculty sponsoring the project. The following table lists the projects undertaken by each of the students, the faculty sponsoring the project, and title:

Student	Faculty Advisor & Area	Project
Shani Hall	Larry Hodges	Modeling Virtual Environments
Jarvis King	(Graphics)	Modeling Virtual Environments
Maurice Dennard	Ron Arkin (Robotics)	Multiagent Robot Navigation and Transferring Data Across the Network
Charles Godwin	George Li (CAI)	Computer Supported Education Toolkit
Robert Brown	(CAI)	Computer Supported Education Toolkit
Debra Waters	Piyawadee Sukaviriya (User Interfaces)	Tale-Spin: A Story Generation Program
Eric Grigsby	Jessica Hodgins (Computer Animation)	Showing Emotion through Motion

3 Evaluation

The success of the program warrants making it an annual activity, with a little "fine-tuning" needed for '94 to improve and streamline the program. These changes are based partly upon the intern's own evaluations of the program and the evaluation of their faculty supervisors (included in an Appendix). Following are a list of recommendations for next year:

- More careful matching of students backgrounds to projects, to ensure that they are properly prepared. We do not wish to discourage interns from doing projects that are challenging, and invariably they "learn new skills and learned to be more independent". However, we need to better assess incoming interns' skills and backgrounds, and project requirements to match students to projects effectively (or supply make-up classes such as training in UNIX/C).
- Increase enrollment to a maximum of 12 students.

Since we had only 7 students the program was very personalized and informal. This undoubtedly contributed to the success of the program. We could expand the program to about 12 students without losing this atmosphere. Increasing enrollment would somewhat complicate coordination of projects, and would probably require funding for continuing education courses specifically for the interns.

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Appendix A – Budget

C-36-542

Category	Original Budget	Encumbered	Expended	Free Bal.
Materials & Supply	\$30,415	\$0	\$26,109	\$4,306
Computer Chgs.	\$2,000	\$0	\$1,999	\$1
Total Direct	\$32,415	\$0	\$28,108	\$4,307
Indirect Chgs	\$4,041	\$0	\$2,448	\$1,593
Total	\$36,456	\$0	\$30,556	\$5,900

Appendix B – Program Evaluations

The following evaluations are self-explanatory. After the program was over we asked each intern to rate the program (to what extent were their expectations fulfilled; their interactions with staff, students, and faculty; and suggestions for improvements). Two of the answers are hard-copy, the rest are electronic submissions (The interns soon discovered that E-mail was the “lingua franca” in the College).

**Summer Internship Program for Minority Undergraduates
Evaluation Form**

Name Shani Hall

1. What did you expect to get out of the summer internship? (e.g., skills, some idea of what graduate school is like, money)?
I expect to not only get usable skills but also get a feel for research in the school atmosphere, esp at a grad. level.
2. To what extent were your expectations fulfilled? (completely, partially, not at all) and why? My expectations were completely fulfilled because I got a chance to learn other applications, techniques, and procedures that I can use during my regular school year; also working along w/ grad students gave me a feel for grad. research.
3. Were there any unexpected benefits (that is things that you got out of the internship, or happened, that you enjoyed, but did not anticipate)?
There were some unexpected benefits. ① I got a chance to find out about writing my master thesis and grad thesis. ② I found out about a new field in computer science that I very much enjoyed and hopefully will continue in that area.
4. How would you rate your interactions with the following:
Scale 10 - 1 : 10 - excellent 1 - poor
• Staff (such as Jalisa) 10. They were very friendly / enjoyable and there when needed.
• Other graduate students you met 10. The students that I worked with were friendly and always made time for questions
• Coordinators (Bill and Charles) 10. Prompt to answer mail on any questions; made sure everything was A.O.K.
• Your faculty project advisor 10. very inspirational; his help made things a lot easier
Were they helpful, available, inspirational, etc.
5. What suggestions do you have for improving the program (e.g., additional activities, when and for how long the internships should be scheduled)? None. I enjoyed the program as is.
6. Is there an address, phone number where you can be contacted throughout the year?
4892 Terrace Green Trace
Stone Mountain GA 30088
(404) 908-0686
7. Would you recommend the program to other students at your college?
All the students.

**Summer Internship Program for Minority Undergraduates
Evaluation Form**

Name Maurice L. Dennyard

1. What did you expect to get out of the summer internship? (e.g., skills, some idea of what graduate school is like, money)?

I expected to gain more knowledge in the area of robotics by writing and modifying code that makes the robot perform certain tasks and to get a better idea of how graduate school works.

2. To what extent were your expectations fulfilled? (completely, partially, not at all) and why?

My expectations were completely fulfilled because I was able to do the research and compile and execute the software for my project.

3. Were there any unexpected benefits (that is things that you got out of the internship, or happened, that you enjoyed, but did not anticipate)?

Yes. I was able to attend a Con-Ed class in C++ and learn some of the basic structures in C++ and do some programming.

4. How would you rate your interactions with the following:

- **Staff (such as Jalisa)** The staff was very instructional and helpful with information both related and non-related to the intern.
 - **Other graduate students you met** One grad. student of Dr. Arkin's was very helpful; however, several others I didn't have a good relationship with.
 - **Coordinators (Bill and Charles)** The coordinators gave good advice about research techniques and general concepts.
 - **Your faculty project advisor** My project advisor was helpful and available for me throughout the program.
- Were they helpful, available, inspirational, etc.

5. What suggestions do you have for improving the program (e.g., additional activities, when and for how long the internships should be scheduled)?
- More social activities could be scheduled for the group to create a tighter knit between coordinators/staff and interns and also with other summer programs at Tech.

6. Is there an address, phone number where you can be contacted throughout the year?

653 Beckwith Street, P.O. Box 28
Atlanta, GA 30314
(404) 524-6267

7. Would you recommend the program to other students at your college?

Yes.

**Summer Internship Program for Minority Undergraduates
Evaluation Form**

Name Charles Gcedwin 7/30/93

1. What did you expect to get out of the summer internship? (e.g., skills, some idea of what graduate school is like, money)?

I expected to focus some skills that I have had out haven't had a chance to apply as much in classes.

2. To what extent were your expectations fulfilled? (completely, partially, not at all) and why?

I would say completely. My knowledge of the TR folk and Tel language has given me a lot more options. I can now make some applications based on my knowledge to add to summer.

3. Were there any unexpected benefits (that is things that you got out of the internship, or happened, that you enjoyed, but did not anticipate)?

Yes, the chance to be part of a development team (CSE) as well as do gruntwork to develop my skills.

4. How would you rate your interactions with the following:

- Staff (such as Jalisa) *Always helpful*
- Other graduate students you met *Peter, Cal (D. don't meet name)*
- Coordinators (Bill and Charles) *Always understanding and helpful*
- Your faculty project advisor *Confident in my attitude and ability*

Were they helpful, available, inspirational, etc.

5. What suggestions do you have for improving the program (e.g., additional activities, when and for how long the internships should be scheduled)?

Maybe give some time options (start later, end earlier). But that's not always good. Maybe less formal meetings come in, I need to see.

6. Is there an address, phone number where you can be contacted throughout the year?

*404) 607-5813 659 Peachtree Street NE #613
Atlanta, GA 30305
gcedwin@ccc*

7. Would you recommend the program to other students at your college?

Definitely, especially those younger (sophomores)

**Summer Internship Program for Minority Undergraduates
Evaluation Form**

Name Robert Brown

1. What did you expect to get out of the summer internship? (e.g., skills, some idea of what graduate school is like, money)?

- an idea of what grad school was like
- skills that I can use in the future

2. To what extent were your expectations fulfilled? (completely, partially, not at all) and why?

- they were mostly fulfilled because I learned some valuable skills. I also learned that grad school is not the way I pictured it.

3. Were there any unexpected benefits (that is things that you got out of the internship, or happened, that you enjoyed, but did not anticipate)?

- a true taste of grad school

4. How would you rate your interactions with the following:

- Staff (such as Jalisa) excellent
- Other graduate students you met ak
- Coordinators (Bill and Charles) excellent
- Your faculty project advisor ak.

Were they helpful, available, inspirational, etc. most people were very inspiring & helpful

5. What suggestions do you have for improving the program (e.g., additional activities, when and for how long the internships should be scheduled)?

It last long enough. I think that people who submit projects for the students should make themselves available for help.

6. Is there an address, phone number where you can be contacted throughout the year?

home (318) 635-5517 school (318) 251-3633

7. Would you recommend the program to other students at your college?

yes

**Summer Internship Program for Minority Undergraduates
Evaluation Form**

Name Debra Waters

1. What did you expect to get out of the summer internship? (e.g., skills, some idea of what graduate school is like, money)?

I expected experience doing work that I had no experience with; therefore, being taught new things.

2. To what extent were your expectations fulfilled? (completely, partially, not at all) and why? Partially.

3. Were there any unexpected benefits (that is things that you got out of the internship, or happened, that you enjoyed, but did not anticipate)?

4. How would you rate your interactions with the following:

- Staff (such as Jalisa)
- Other graduate students you met
- Coordinators (Bill and Charles)
- Your faculty project advisor

Were they helpful, available, inspirational, etc.

5. What suggestions do you have for improving the program (e.g., additional activities, when and for how long the internships should be scheduled)?
6. Is there an address, phone number where you can be contacted throughout the year?
7. Would you recommend the program to other students at your college?

Debra Waters

1. I expected experience doing work that I had no experience with; therefore, I expected to be taught new ideas/projects

2. My expectations were partially fulfilled in that the professor I chose was not fully helpful in completing my assignment as her inside knowledge of the project was fuzzy. She did not write the program that I was to modify. The writer was in California. This somewhat hindered the progress.

3. One unexpected benefit from the program was full compensation for housing.

4. Interactions with:
Staff - Jalisa - great! She always came through

Other grads - Vernard, Jk.
Yves - all willing to help

Coordinators - Bill / Charles - very helpful! Bill, even in his absence made sure that the program was kept up.

Charles - provided good advice alongside resources to make our program fulfilling.

Faculty Project Advisor -

Piyawadee Sukarivirga (Noi)

She had good intentions; however, during the course of the program she obtained other distractions that didn't allow her time to help me as often as I needed. She did make sure our meetings were kept, but on the few days I couldn't meet on time, I'd reschedule. She'd have problems remembering these changes. My belief is that the other distractions had her attention. Her indepth knowledge of the modifications that I was making were vague as she didn't write the program. So, for help she'd tell me to ask Jk. My interactions with Noi were partially satisfied.

5. I suggest the intern working with the faculty project advisor on a daily basis to complete the assigned project, or until there is a complete understanding of the intern's task.

Also, the task assigned should be something the project advisor is working on currently his/her self.

6 550 Mitchell St. SW.
Atlanta, GA. 30314

↳ Permanent: 612 E. New Hudson St
Valdosta, GA 31601
(912) 244-2384

7. I would definitely recommend the program to other students at my college